or inconvenient has to be introduced into the apartments; to say nothing of the risk of fire, which is often incurred. Now, every one who understands warming buildings could arrange his plans, and give his estimate of them, quite as well from the architect's drawings as from the building itself. If architects would prepare for what was to be done beforehand, we might have better apparatus arranged, in a more convenient manner, at less expense.

Once a fortnight we are coolly asked to describe the various methods which might be used for warming this staircase or that house, and to point out the best. We have on various occasions treated the general question of heating and ventilating (may do so again), and never omit to mention fresh suggestions or inventions bearing upon it. The treatment of special cases we cannot enter upon: we recommend application to (ourselves professionally, if they please) properly qualified parties, who will advise with reference to the particular circumstances.

PORTER'S PATENT CORRUGATED IRON BEAMS.

MR. PORTER, of the Iron-roofing Works, Southwark, who has used *corrugated iron* largely in the construction of portable houses for exportation, has taken out a patent for the employment of it in the construction of beams, believing that the corrugations so far strengthen the iron as to obtain for beams so formed, great power of resistance with small weight of metal.

The following is an account of an experiment recently tried upon two beams made on this plan, of the extreme length of 22 ft. The span between supports was 20 ft. 6 in.; depth of beam, 18 in.: weight of beam, 8¼ cwts.; the top and bottom frames were of 4 in. × 4 in. T-iron, and the base ⅛ in. thick; the plates of corrugated iron forming the beam being of No. 16 gauge, and the bands 1½ in. × ¼ in. thick. The two beams were placed 9 ft. apart, and across these were laid two large oak blocks, weighing 1 ton 3 cwts., and supporting the further load. These blocks, or bearers (the one 19 in. and the other 24 in. wide), were 4 ft. 3 in. apart from centre to centre, and equidistant from their centres to the centre of the beam, 25½ in.; upon these were laid cast-iron blocks, weighing 6 tons 17 cwts. This weight was put on on Saturday and remained till Tuesday, without causing any deflection. On Tuesday, in the course of an hour-and-a-half, an additional load was applied of 121 bundles plate-iron, weighing 7 tons 3 cwts. 0 qr. 16 lbs., producing a deflection of $\frac{7}{16}$ in. This load was allowed to remain from 1 p.m. on Tuesday until 10 a.m. on Wednesday, in course of which time the deflection had increased $\frac{1}{16}$ in. Fifty-one bundles of plate-iron, weighing 3 tons 9 cwts. 1 qr. 2 lbs., were now added, which caused a total deflection of 1 in. bare; rested a quarter of an hour, when 32 bundles of plate-iron, weighing 1 ton 18 cwts. 0 qr. 12 lbs. were added, which increased the deflection to 1⅞ in. and 1$\frac{1}{16}$ in. respectively; the difference being evidently occasioned by the settling down of the piers, giving a greater load to one beam. A further load, weighing 2 tons 5 cwts. 3 qrs., brought the deflections to 1⅞ in. and 1¾ in. This loading was proceeded with gradually during three hours, when the load was left for an hour. In the meantime a slight noise called attention to a partial dividing of the bottom flange of T-iron, in the beam which hitherto appeared the least strained: upon examination, it was found to have originated in a flaw near a "shut" in the T-iron, distant 6 ft. 3 in. from the point of support,—this caused a further deflection of $\frac{1}{16}$ in., but the fracture did not appear to increase during half-an-hour. The deflection of the beams increased to 2 in. and 1¾ in., with an additional load of 2 tons 6 cwts. 2 qrs. 22 lbs. load applied gradually during three-quarters of an hour. After a further lapse of 10 minutes, a further load of 7 cwts. caused a rapid deflection in the already-weakened beam, the corrugated iron giving way at the same time to the strain of the rivets longitudinally. The beams were now blocked up to prevent any accident from the sudden falling of the load. The corrugated iron of the other beam was also found to have yielded in several places to the longitudinal strain of the rivets, principally in the lower part of the beam.

The breaking weight is, therefore, considered to be about 25 tons, exclusive of the weight of the beams.

The inventor considers that his beams will not weigh more than one half, or 5-8ths, of the weight of cast-iron beams to carry the same load, and that they may be made for 21*l.* per ton.

A SCHOOL OF DESIGN FOR LEICESTER.

AN influential and respectable meeting lately took place at Leicester, to memorialise Government for aid in their endeavours to establish a School of Design there. The mayor presided, and a series of addresses followed. Mr. Alfred Burgess impressed on the attention of the assembly the importance of an idea of our own, that the young should be taught to express or describe their ideas by drawing, or in forms, just as they are taught to express them by writing, or in words; and the allusions of others to the same idea, as well as the responses of the meeting itself, were evidence that it was appreciated. Mr. Hollings remarked that the pursuit of the fine arts might be shewn to be necessary to society at large, as materially involving the diversion of labour into various channels. Want of a greater variety of employment was one of the great causes of existing distress. Let it not be said, either, that the advantages of the fine arts were to be seen merely in the production of luxuries. What was the luxury of one age, became a necessary in the next. How much occupation was now afforded even there by the employments of carving, gilding, painting, inlaying, designing of furniture, marbling, engraving on copper and wood, &c. Yet how serious would be the effect, if those engaged in their production were suddenly withdrawn from this field of labour, and thrown into that of the staple manufacture of the town! Moreover, the fine arts were so essentially connected, that the study and practice of one almost invariably called forth or involved that of others; and then, too, how much indirect advantage they further afforded, as involving numerous other occupations in themselves not purely artistic. Take, for instance, the manufacture of an ordinary porcelain vase—to be found on the mantelpiece of most of the middle classes in the town. How many branches of industry were connected with it, with which the genius of the designer had nothing to do. There was the collection and preparation of the crude material by the various processes of breaking, sifting, and working—the manufacture of the metallic oxydes to be used by the artist—the subsequent processes of glazing and firing; all distinct branches these, to be carried on both before and after the impression of the design upon the ornament—the only process upon which art was directly though essentially concerned. In short, the more we multiplied the influence and operations of art in connection with the production of luxuries, the more we should multiply profitable occupation and employment for the people. For, in this case, the usual maxim of political economy was reversed: instead of the demand creating the supply, the supply created the demand. As an illustration, just let them look at the improvement in the form and material of common earthenware within the last hundred years,—a change entirely owing to the residence of a few cheap Italian modellers in England. It was for the above and similar reasons that he should like to see a School of Design established in Leicester. The importance of design and variety of pattern and style, even in the staple manufacture of embroidered gloves, fancy hosiery, &c., themselves, was afterwards also pointed out by others ere the meeting closed.

COMBINATIONS AND STRIKES.

WE have received several letters on the subject of recent differences between operatives and their employers, but do not think it desirable to prolong the agitation by publishing them. The majority of them are from working men, deprecating, to the credit of the writers be it said, any thing like intimidation. Some of them display much good sense. The following is part of one from "An Old Mason."

"Combinations and strikes are decidedly injurious, diminishing trade on the one hand, increasing immorality on the other; and are one of the great causes of our present distress, for an increase of crime will cause an increase of poverty. Crime, and that which leads to it, are the most expensive of all evils; witness, for instance, our prisons, hospitals, poor-houses, police force, and a multiplicity of other officers to put in force the laws of the country. These are some of the natural consequences and expenses attendant on crime; and unless there be a decrease of crime, we may look in vain for better times.

We are as a nation conscious of labouring under great difficulties, and many and loud are the complaints against those who sit at the helm of affairs. But one truth is evident, that while such large sums of money are necessary for the punishment of crime, the expenditure must greatly diminish the means for promoting the moral welfare of the people. It is also obvious to any strict observer, that many of those who are loudest with their complaints, and are crying out for reform, are most effectually impoverishing their country. Even under present circumstances, the industrious and frugal mechanic can usually maintain himself respectably; and if we make a fair calculation, two-thirds of the poverty and distress experienced among the working classes are brought on themselves by bad habits. There is too much ocular demonstration in this city for the fact to be denied. We want better times, is the common cry; we want wages raised and taxes diminished. Let us suppose we could obtain them both. A few that are economical would make more rapid progress to independence: the many who are careless and prodigal would descend in the scale. But still the desired object may be obtained, and obtained fairly. A decrease of crime will naturally cause a decrease in the taxes. Peace between employers and employed, the government and the people, will promote the prosperity of trade. Plenty of labour will of itself ensure a fair remuneration. A proper improvement of wages will keep poverty at a distance, and secure to us peace and plenty. It is evident, therefore, that crime, poverty, disease, and distress go hand in hand, whilst peace, industry, and frugality lead to happiness and independence. Reader, choose for yourself, but remember, the man who is punished for his crimes at his country's expense is increasing the burthen of the honest and industrious."

THE ANCIENT CHURCH AT GREENSTEAD.

SIR,—I infer, from a paragraph in THE BUILDER, that a wrong impression has gone forth as regards the wooden church at Greenstead, namely, that it has been destroyed, or at least partially so. Now, Sir, that is not the fact, and if any person, having seen the outside of the timbers six months ago, could see them at the present time, they would scarcely be able to say, from their appearance, whether they had been removed or not. It was also stated that it was owing to the ravages of insects that it had become necessary to take it down. This in some measure is correct, as the lower ends of the timbers were in many instances perforated, but not to any great extent. The principal cause of its being taken down was this: the oak sills having been laid on the earth, with merely some rough flint put under them at intervals, had become so rotten as to let the upright timbers drop through, and had not the ends of the wall plates rested on the brickwork of the chancel, a great part of the nave must have fallen. It has been the particular wish of the rector, the Rev. Philip Ray, by whom the expense of the rebuilding the church is principally defrayed, and also of Mr. Wyatt, the architect, that every part of the old timbers should be preserved, and I have been careful to carry out those wishes: the only parts lost are about 6 inches cut from the lower ends: the timbers have been fresh tenoned and inserted in oak sills laid on brickwork, 12 inches from the ground, so that there is every reason to presume they will last as long as they have already stood, for the planks, when cut, were so hard as almost to defy the saw. A new roof, open, and stained oak has been put on, having dormer windows, with stained glass, inserted. The whole of the plastering having been taken off, the planks are now seen inside. The pews are taken away and new seating fixed. The church will be open for divine service about the middle of February next, when any who feel a veneration for the relics of bygone days, will be able to see that this ancient structure has been preserved to the fullest extent possible.

JAMES BARLOW, Builder.

Chipping Ongar, Essex.

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